Installation of LVDB

This document will show you how to install the LVDB on a CSC cooling plate.

Tools required:

Phillips-head screwdriver, #1 tip

Electric screwdriver, with #1 Phillips bit.

LVDB thermal pad template.

(# MB 400326)

Thin scratch-awl or machinist's scribe.

Preparation required:

The cooling plate must be mounted on the chamber.

Surface of cooling plate in LVDB area must be clean.

Materials required:

LVDB

1 per chamber

(# MD 400030)

LVDB mounting screws

8 per LVDB

(# MA 400155)

Regulator mounting screws

20 per LVDB

(# MA 400167)

LVDB thermal pad

1 per LVDB

(# MB 400171)

Note re. LVMB installation:

This document does not address the installation of the LVMB, which ideally would take place together with that of the LVDB. At the moment of writing, the assembly sites are installing the LVDB alone, with the installation of the LVMB to be done as a retrofit once production LVMBs are available. This document will be updated to include the installation of the LVMB once that takes place.

Mount Template

The LVDB thermal pad template is designed to assist in positioning the LVDB thermal pad.

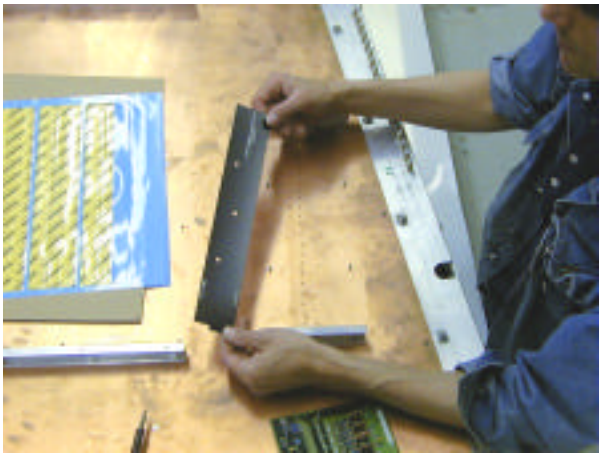
It consists of a precision-cut plastic sheet with two holes that fit over two of the inboard LVDB standoffs

Hold the template such that the black (printed) side is facing you and the engraved print is upright.

Standing on the HV side of the chamber, position the template such that the two inside LVDB standoffs in the rear row fit in the holes in the template as shown. Ignore the hole in the middle of the template.

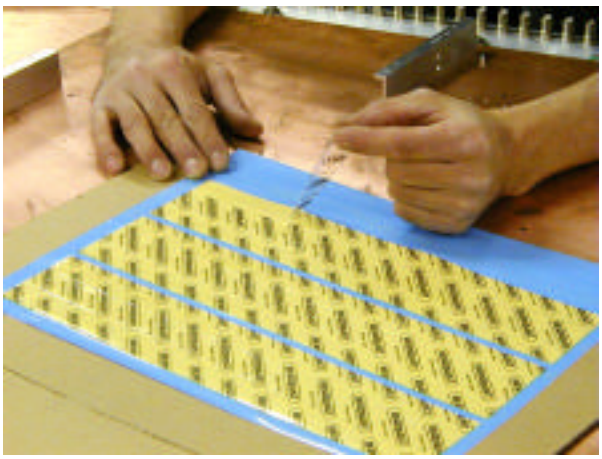
This is how the template should look once it's in position.

Note the "tab" on the right end of the template. It will be used to index the right end of the thermal pad.



Prepare Thermal Pad

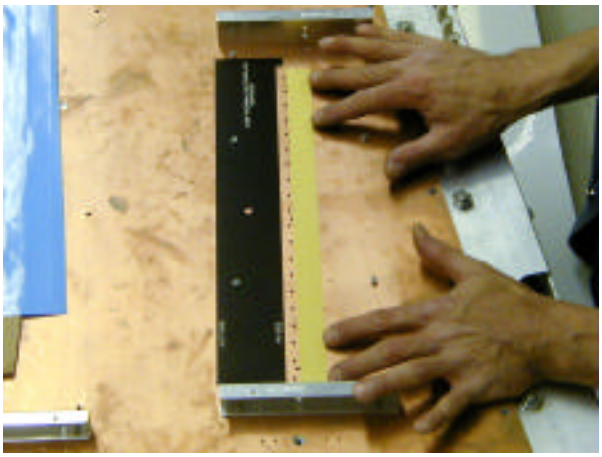
The LVDB thermal pads are die-cut strips supplied on a blue backing sheet. They have a clear protective covering that must be removed before the pads are positioned.



Peel away the clear covering on one strip as shown. The exposed surface has a light natural tack. This is the surface that will face down, that is, touching the cooling plate.

Next, peel the exposed thermal pad off the blue backing sheet as shown.

Place the strip on the cooling plate. The face of the strip that originally had the clear backing should be down against the copper sheet.



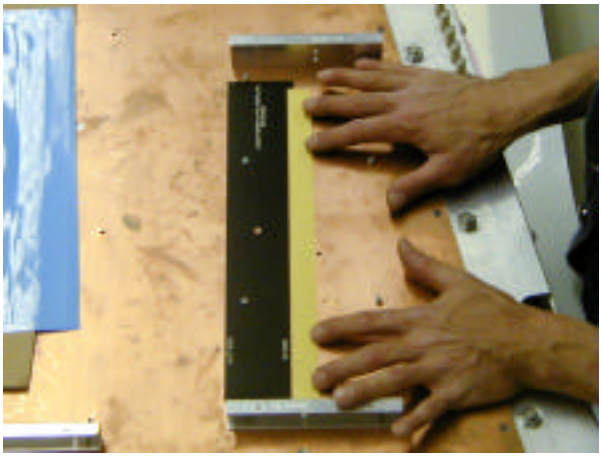
Position Thermal Pad

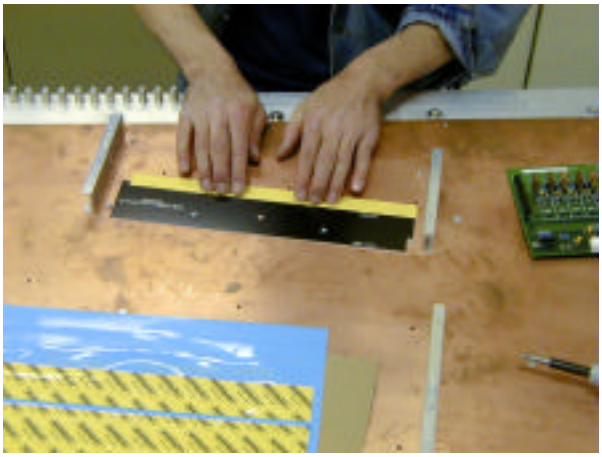
Gently slide the strip against the long edge of the template and the against the tab on the right side of the template as shown.

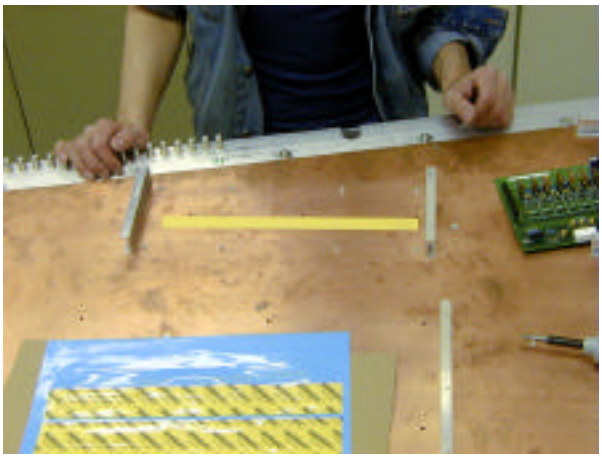
> Do not press down on the strip, or it will stick to the copper. Push it gently by the edges. If the strip sticks to the cooling plate, gently pull it loose and try again.

Once the strip is positioned properly, smooth it down gently, using light finger pressure. Make sure that the entire surface of the strip lies flat against the copper sheet.

Remove the thermal pad template from the cooling plate, taking care not to disturb the thermal pad in the process. This is how the thermal pad should look once it's in position.

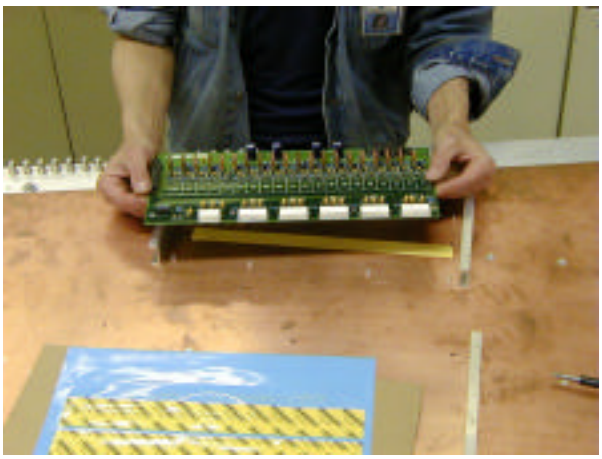




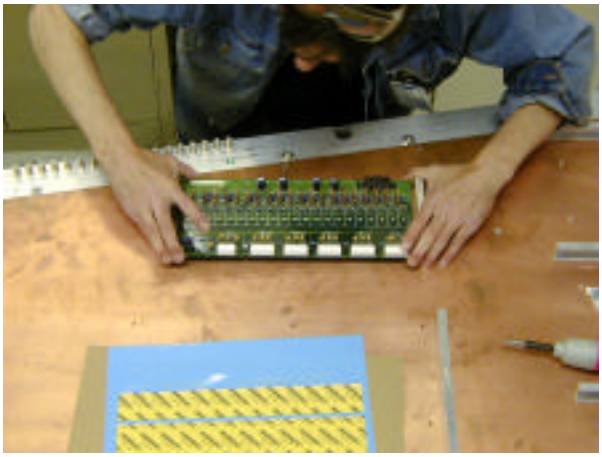


Mount LVDB

Place the LVDB onto the cooling plate as shown, taking care not to dislodge the thermal pad.

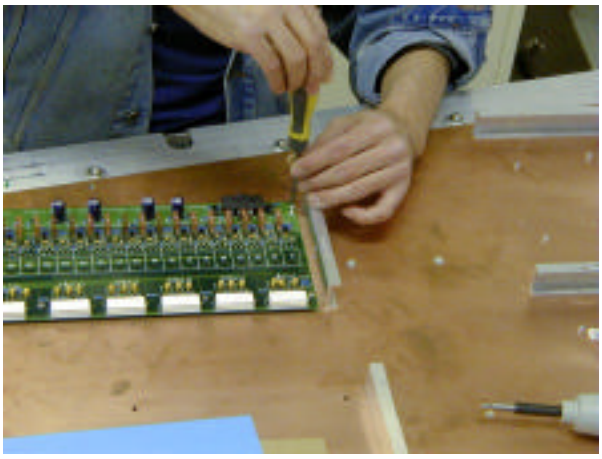


Ideally, the LVDB should be lowered into position vertically and not moved from side to side in the process of seating.



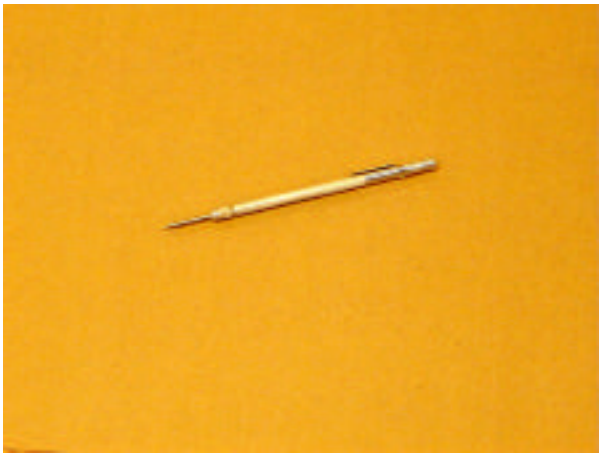
The 8 LVDB mounting holes should line up with the threaded standoffs on the cooling plate.

Position the 8 LVDB mounting screws in the threaded inserts by hand, then tighten them using a screwdriver as shown.

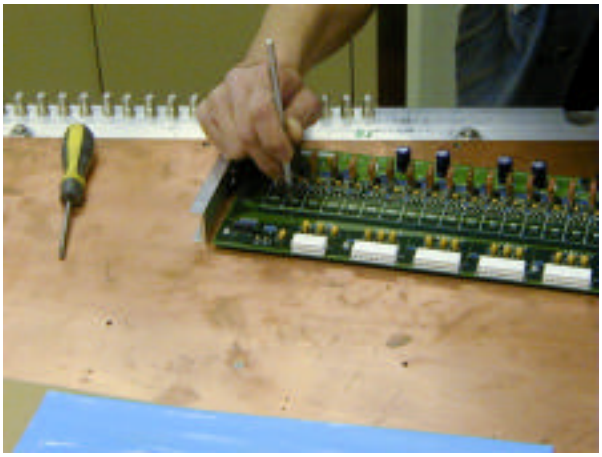


Pierce Thermal Pad

Use a thin scratch awl or a machinist's scribe (shown) for this step.

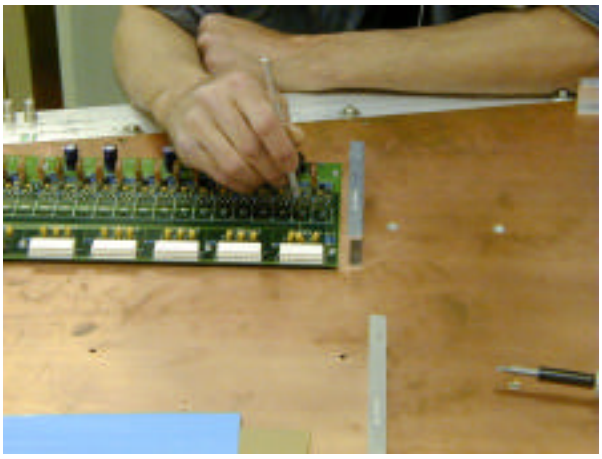


Starting at one end of the LVDB, insert the scribe through the hole in the regulator and pierce the thermal pad underneath it. It is not necessary to make a large hole. Simply piercing the thermal pad material is sufficient.



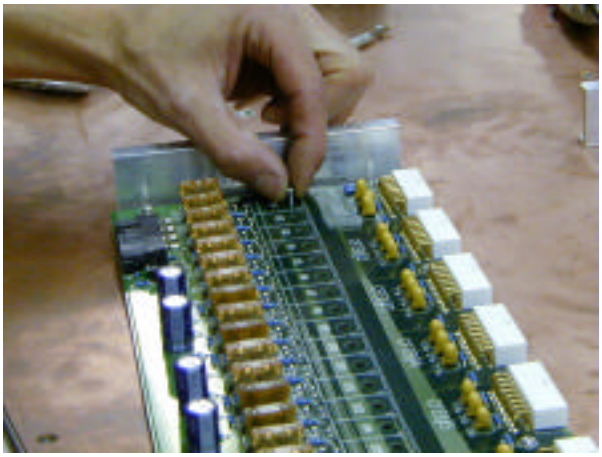
The scribe should penetrate through the hole in the cooling plate corresponding to the regulator above it. If the scribe cannot penetrate, then it's likely that the LVDB is misaligned. Dismount the LVDB and investigate before proceeding any further.

Continue piercing the thermal pad for each regulator in turn, working from one end of the LVDB to the other.

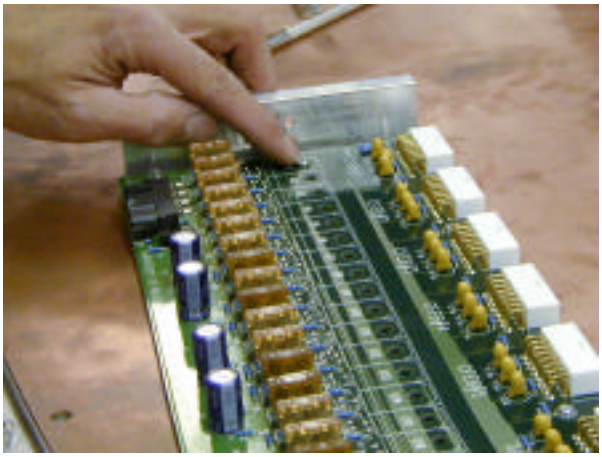


Seat Regulator Screws

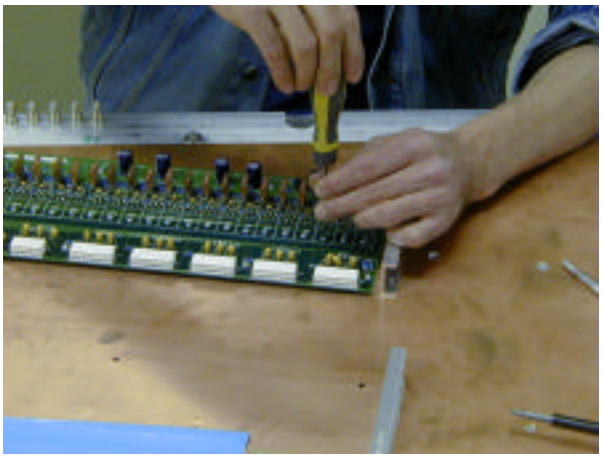
By hand, seat the regulator mounting screws by pushing them through the regulator mounting holes until they seat against the copper cooling plate underneath.



Work from one end of the LVDB to the other, until each regulator has a mounting screw installed.



Using a screwdriver, start each screw into the copper sheet by turning it one-half to one turn. Make sure that each screw is started straight (vertical). Work from one end of the LVDB to the other until all screws are started.



Complete Installation

Using an electric screwdriver, tighten each of the regulator mounting screws.

Best results are obtained by operating the screwdriver in a “pulse” mode, which provides early indication of the screw head seating. Tighten each screw until it’s snug against its regulator.

Note that the screws do not touch the LVDB board itself, and that the screw heads lie inside the clearance holes of the board.

This completes the mounting procedure for the LVDB. This is how the LVDB should look at this point.